

614 PCC TRAFFIC BARRIERS

614.01 PCC MEDIAN AND CURB BARRIERS

(A) DESCRIPTION. Work consists of the construction of PCC traffic barriers in accordance with these specifications at locations indicated in the contract documents and/or established by the Engineer. The types of barrier will be stipulated in the contract documents. They may be precast or cast-in-place. The construction of various types of barrier shall include the assembly and erection of all component parts and furnishing all materials complete in place.

When it is necessary to transition the concrete median barrier into a section different from the standard uniform section such as at bridge piers, sign pedestals, bridge end walls, or terminal sections, it shall be accomplished in a smooth and uniform manner as shown in the contract documents.

(B) MATERIALS.

Concrete - 817, Class B

Reinforcement - 812.02

Epoxy Coated Reinforcement Bars - 812.03

Preformed Joint Filler - 807.01

Anchor Bolts, Rods, Sleeves, Dowels, etc. - 815.01

Compression Seals - 807.06

Epoxy Grout - 806.05(C)

Mastic Joint Sealer - 807.02(B)

Barrier Markers - 821.15(B)

(C) CONSTRUCTION REQUIREMENTS.

(1) CAST-IN-PLACE BARRIERS. When casting in place, the forming may be either the slip-form or conventional fixed form method.

Cast-in-place concrete barriers shall be in accordance with the following:

(a) FIXED FORM METHOD. Forms shall be steel and of such construction that there shall be minimum interference to inspection for grade and alignment. The condition and the stability of the forms shall be such that they will produce a barrier that shall meet the required tolerance of deviations not exceeding 1/4 inch in ten feet in either grade or alignment. Before concrete is placed against the forms, they shall be thoroughly cleaned and coated with form release compound each time they are used.

Concrete shall be mixed in accordance with 501.09 and placed in accordance with 703.08. Concrete shall be vibrated by means of an approved immersion type mechanical vibrator.

Construction or contraction joints shall be constructed every 20 feet except that joints shall match the joints in the roadway where barrier is anchored to the roadway slab. However, sections of 10 feet length may be constructed if necessary to make use of delivered concrete. Expansion joints shall be placed at the same location as that of the roadway or as directed by the Engineer.

Concrete shall be finished in accordance with 703.19. The top of barrier, when finished, shall show no deviation from grade and alignment in excess of 1/4 inch in 10 feet.

The minimum time required before removal of forms will depend on the temperature at the time of pour and shall be as follows:

Temperature	Hours
Greater than 50°F (10°C)	12
Between 40°F (4°C) and 50°F (10°C)	24
Less than 40°F	72

All honeycombed and damaged areas shall be repaired to the satisfaction of the Engineer immediately after the removal of the forms.

(b) SLIP-FORM METHOD. Slip-form equipment shall be approved by the Engineer and include the incorporation of automatic guidance controls to follow line and grade reference. The use of manual control on slip-form equipment is not permitted. Line and grade reference shall consist of taut lines or wire suspended from supports set in the subgrade or adjacent pavement. The references shall be 25 feet intervals on uniform grades and tangent sections. On vertical and horizontal curves, an additional intermediate support shall be set in the field to establish a reference line acceptable to the Engineer. The use of ski or shoe sensors reflecting variations in grade of existing roadway surface will not be permitted.

Concrete shall be mixed in accordance with 501.09. The concrete shall be of such consistency that after extrusion it will maintain the shape of the barrier without support. The surface shall be free of surface pits larger than 3/16 inch in diameter. The concrete shall require no further finishing other than light brushing with water only. Finishing with a brush application of grout will not be permitted.

If during the operation of the slip-form equipment a tear occurs, it shall be repaired immediately. The repair shall be made in accordance with good concrete practices that are acceptable to the Engineer. It will be at the sole discretion of the Engineer as to whether the tear can be repaired or whether the areas will require removal and replacement.

Contraction joints shall be sawed or formed at 20 feet intervals in the barrier and footing. Each joint shall be a minimum of 2 inches in depth and 1/8 inch in width. Expansion joints will be required at the same location as that of the roadway and as directed by the Engineer. However, sections of 10 feet length may be constructed if necessary to make use of delivered concrete. At the terminus of any pour less than 20 feet a bulkhead form shall be placed; and six No. 8 dowels, 2 feet long, shall be placed through the bulkhead. No joint material is required.

The concrete footing may be constructed by the fixed form or the slip-form method. The construction of the footing and the barrier section as a monolithic pour is not permitted.

(2) PRECAST CONCRETE BARRIERS. Precast concrete barriers will not be permitted on curves of short radius. They shall be cast in sections having a uniform length of 10 to 12 feet.

The concrete shall be placed, cured and protected in accordance with 703.08 and 703.18. Lifting holes, rings, hooks or other handling devices, as approved by the Engineer, may be inserted in the precast sections. Holes exposed to completed work shall be filled with mortar. Other handling devices shall be removed to the satisfaction of the Engineer.

The supporting concrete base shall be constructed by the conventional fixed form method and shall have joints constructed at 10 feet intervals to coincide with lengths of barriers. The joint shall be constructed by sawing or other methods for the width of the base to a minimum depth of 3 inches. The base section shall be doweled to the barrier section as shown in the contract documents.

Precast barriers shall be placed in such a manner that there will generally be a joint opening of 1/4 inch between sections. To this specified joint opening, a tolerance of 1/8 inch plus or minus will be permitted throughout the plane of the joint.

The ends of each section of barrier shall have an interlocking configuration and/or mechanical locking device to resist lateral movements when in final position.

All surfaces shall have an ordinary finish as specified in 703.19.

(D) MEASURE.

The unit of measure for PCC Median Barrier (Cast-In-Place or Precast) and PCC Curb Barrier will be the linear foot as measured along the top center line of the barrier complete in place. The unit of measure for PCC Median/Curb Barrier (Variable Section) will be the cubic yard. If installation of Barrier Markers is specified, they will not be measured for payment.

(E) PAYMENT.

Payment for each type of barrier will be made at the contract unit price per linear foot or per cubic yard as measured above which payment shall be full compensation for all equipment, labor, materials, such as reinforcement, joint filler, compression seals, epoxy grout, anchorage, and incidentals necessary to complete the various items of work.

No payment will be made for Barrier Markers. The cost of markers will be included in the contract unit price for the barrier.

614.02 PORTABLE PRECAST PCC BARRIER

(A) DESCRIPTION. Work consists of furnishing, installing and maintaining temporary precast PCC New Jersey type safety barriers, including replacing any broken sections, maintaining proper alignment, relocating barriers as shown on the contract plans or as per approved traffic control plans, during the course of the project, and removal from the work site after completion of the project. Work also includes cleaning the barriers as directed.

Barriers shall be 2 feet 8 inches in height and 2 feet in width. Typical section lengths shall be 12 feet but may be varied to insure portability and proper installation. Barrier ends shall have approved interlocking configurations and/or mechanical devices to resist lateral movements when in proper position. Pin and loop or steel plate inserts are examples of acceptable connections. Tongue and groove configurations are not acceptable. Where specified on the contract plans, barriers shall be anchored to the concrete bridge deck at no additional cost to the District. Barriers shall have drainage slots or be placed so as not to impede proper drainage of the roadway surface.

(B) MATERIALS.

Concrete - 817, Class B
Welded Wire Fabric - 812.01 (4 x 4)
Barrier Markers - 821.15(B)

(C) MEASURE AND PAYMENT.

The unit of measure for Portable Precast PCC Barrier will be the linear foot. The length for measurement will be the actual maximum length in use at any one time. If installation of Barrier Markers is specified, they

will not be measured for payment.

Payment will be made at the contract unit price per linear foot, which payment will include all labor materials, tools, equipment and incidentals necessary to complete the work.

No payment will be made for Barrier Markers. The cost of markers will be included in the contract unit price for the barrier.